

WHAT IS CLAIMED IS:

1. A surface acoustic wave device having a quartz substrate and IDT electrodes arranged on the quartz substrate and exciting a quasi-longitudinal leaky surface acoustic wave,

a standardized substrate thickness  $t/\lambda$ , which standardizes a thickness  $t$  of the quartz substrate to an IDT wavelength  $\lambda$ , being set to be  $1 < t/\lambda < 35$ .

2. The surface acoustic wave device according to Claim 1, the quartz substrate being cut in a Euler angle range ( $0^\circ$ ,  $100$  to  $150^\circ$ ,  $0^\circ$ ).

3. The surface acoustic wave device according to Claim 1, wherein in the quartz substrate, a reinforcing portion being provided on at least one of an IDT electrode-forming surface and a surface opposite thereto, the reinforcing portion being disposed in a region in which the IDT electrodes are not formed.

4. An electronic apparatus including, as a filter or a resonator, the surface acoustic wave device according to Claim 1.

5. A method of manufacturing a surface acoustic wave device, comprising:  
adjusting a thickness of a quartz substrate;  
forming IDT electrodes, which excite a quasi-longitudinal leaky surface acoustic wave, on the thickness-adjusted quartz substrate to obtain a surface acoustic wave element; and

fixing the surface acoustic wave element on a predetermined package;  
wherein, in adjusting the thickness of the quartz substrate, the thickness of the quartz substrate is adjusted such that a standardized substrate thickness  $t/\lambda$ , which standardizes a thickness  $t$  of the quartz substrate to an IDT wave  $\lambda$ , satisfies  $1 < t/\lambda < 35$ .

6. A method of manufacturing a surface acoustic wave device, comprising:  
forming IDT electrodes, which excite a quasi-longitudinal leaky surface acoustic wave, on a quartz substrate to obtain a surface acoustic wave element;  
adjusting a thickness of the quartz substrate by shaving a surface of the quartz substrate opposite to the IDT electrode-forming surface; and

fixing the surface acoustic wave element on a predetermined package;  
wherein, in adjusting the thickness of the quartz substrate, the thickness of the quartz substrate is adjusted such that a standardized substrate thickness  $t/\lambda$ , which standardizes a thickness  $t$  of the quartz substrate to an IDT wave  $\lambda$ , satisfies  $1 < t/\lambda < 35$ .

7. A method of manufacturing a surface acoustic wave device according to Claim 5 the method further comprising a frequency-adjusting step of adjusting the frequency of the surface acoustic wave element after the third step,

the frequency being adjusted by adjusting the thickness of the quartz substrate at the surface opposite to the IDT electrode-forming surface.

8. A method of manufacturing a surface acoustic wave device according to Claim 7, wherein, in the frequency-adjusting step, the surface of the quartz substrate opposite to the IDT electrode-forming surface is shaved by dry etching.

9. A method of manufacturing a surface acoustic wave device according to Claim 7, the method further comprising a step of preliminarily adjusting the frequency by shaving at least one of the surface of the IDT electrodes and the IDT electrode-forming surface of the quartz substrate before the frequency-adjusting step.